THE MINISTER OF STATE IN THE DEPARTMENTS OF ATOMIC ENERGY AND SPACE (SHRIMATI VASUNDHARA RAJE): (a) Yes, Sir. The Department of Atomic Energy (DAE) is funding a project for the development of ceramic matrix for immobilisation of high level radioactive waste. The study is being carried out in the Institute of Science, Mumbai.

(b) So far, the studies pertaining to preparation and characterization of sodium zirconium phosphate have been completed.

(c) The funding for the study is scheduled at present to be over by the year 2004. The studies, however, are expected to continue thereafter.

Leakage of radioactive substances

†893. SHRIMATI SAVITA SHARDA: Will the PRIME MINISTER be pleased to state:

(a) whether government are aware of the fact that several incidents of leakage of the most sensitive radioactive substances of atomic plants have taken place in the country;

(b) if so, the details thereof;

(c) whether it is a fact that the construction and maintenance of atomic plants is so poor that the incidents like Chernobil are feared any time;

(d) if so, whether Government have formulated any scheme to improve maintenance and safety of the plants; and

(e) if so, the details thereof?

THE MINISTER OF STATE IN THE DEPARTMENTS OF ATOMIC ENERGY AND SPACE (SHRIMATI VASUNDHARA RAJE): (a) and (b) Yes, Sir. There were a few incidents of leakage of tritiated heavy water from the nuclear power plants in India. None of these had any significant impact on public and environment. Details are available in the Annual Report of Atomic Energy Regulatory Board and are as follows:

(1) Subsequent to a leak in a moderator heat exchanger of Unit-2 of the Rajasthan Atomic Power Station on May 05, 1998, heavy water containing tritium got released into the Rana Pratap Sagar

†Original notice of the question was received in Hindi.

Lake. The annual radiation dose to the public due to the release was 25 microsievert compared to the annual dose limit of 1000 microsievert prescribed by Atomic Energy Regulatory Board. Though release was above the limit prescribed by AERB, the impact of the release was negligible.

(2) On March 26, 1999 heavy water leaked from Unit-2 of Madras Atomic Power Station due to failure of a seal plug during coolant channel inspection. The incident lead to release of some radioactive through the stack, which was well within the limit prescribed by AERB.

(3) On April 15, 2000 tritium containing heavy water leaked from the moderator system of Unit-2 of Narora Atomic Power Station into the reactor building. This leak occurred due to the failure of the gasket of flang joint. The activity released was within the prescribed limit.

(4) On June 16, 2000 a tube leak occurred in one of the heat exchangers of steam generator No. 1 of Unit-1 of Madras Atomic Power Station resulting in release of some amount of tritium into the environment through liquid route. The activity released was within the limit prescribed by AERB.

(5) On September 26, 2000 there was one incident of release of tritium activity from Rajasthan Atomic Power Station to Rana Pratap Sagar Lake. The activity released was well within the limits prescribed by AERB.

(6) On November 20, 2001 the end fitting blank of one of the coolant channels of Narora Atomic Power Station Unit-1 leaked tritium containing heavy water. The incident did not result in any release of activity in excess of the prescribed limit.

(c) to (e) No, Sir. The nuclear power plants in India are designed, constructed and operated as per the provisions of prescribed safety codes and standards. The maintenance practices and operating procedures are as per approved norms and are scrupulously followed. In view of these reasons, an accident like that which occurred at Chernobyl is highly unlikely.